

In the Claims:

Following is a complete listing of the claims pending in the application, as amended:

1 – 81 (Cancelled)

82 (New) In radiation therapy using a radiation beam, a method of setting up a radiation treatment for a patient situated on a patient support of a radiation treatment device so that a wireless marker implanted in the patient relative to a target can be sensed by a sensor, the method comprising:

sensing position information of the marker that indicates a sensed location of the marker relative to a reference frame; and

computing a displacement between an actual location of the target in the reference frame and a desired situs of the target in the reference frame, wherein the actual location of the target is determined from the position information of the marker.

83. (New) In radiation therapy using a radiation beam, a method of setting up a radiation treatment for a patient situated on a patient support of a radiation treatment device so that a wireless marker implanted in the patient relative to a target can be sensed by a sensor, the method comprising:

sensing position information of the marker that indicates a sensed location of the marker relative to a reference frame; and

computing a displacement between the sensed location of the marker and a desired location for the marker, wherein the target is located at a desired situs in the reference frame when the marker is at the desired location for the marker.

84. (New) The method of claim 83, further comprising automatically moving the patient support according to the computed displacement to place the target at the desired situs.

85. (New) The method of claim 84, further comprising repeating the sensing and computing procedures after moving the patient to confirm that the target is at the desired situs.

86. (New) The method of claim 83, further comprising moving the patient support according to the computed displacement.

87. (New) The method of claim 83, further comprising determining an actual location of the marker by calculating a three-dimensional coordinate of the marker in the reference frame.

88. (New) The method of claim 83 further comprising situating the patient on the patient support by determining respective locations of a plurality of surface markers attached to the patient and positioning the patient on the patient support so that individual surface markers are generally within a desired range of corresponding surface marker locations.

89. (New) The method of claim 83 wherein the marker comprises a resonating marker that wirelessly transmits a signal in response to a wirelessly transmitted excitation energy, and the method further comprises exciting the marker with the excitation energy.

90. (New) The method of claim 89 wherein the marker comprises a marker that transmits a resonating magnetic field in response to an alternating magnetic field, and the method further comprises exciting the marker with the alternating magnetic field.

91. (New) The method of claim 83, further comprising:
automatically moving the patient support according to the computed displacement to place the target at the desired situs; and
irradiating the patient with the radiation beam.

92. (New) The method of claim 91 further comprising repeating the sensing and computing procedures after automatically moving the patient but before irradiating the patient to confirm that the target is at the desired situs.

93. (New) The method of claim 83 wherein another human can be proximate to the patient during the sensing and computing procedures.

94. (New) The method of claim 83 wherein the computing procedure occurs generally while the sensor obtains the position information.

95. (New) A method of positioning a target of a patient relative to a beam isocenter of a radiation beam when the patient is situated on a patient support of a radiation treatment device so that a wireless marker implanted in the patient relative to the target can be sensed by a sensor, the method comprising:

sensing the marker to obtain position information related to the location of the marker;

determining an actual location of the marker based on the position information;

moving the patient according to the actual location of the marker if a displacement between the target and the beam isocenter is beyond an acceptable range; and

tracking the target relative to the beam isocenter by repeating the sensing and determining procedures.

96. (New) The method of claim 95, further comprising terminating movement of the patient when the actual location of the marker and/or the displacement between

the target and the beam isocenter indicates that the target is at a desired situs relative to the beam isocenter.

97. (New) The method of claim 95, further comprising inputting to the computer a desired situs of the target relative to the beam isocenter, computing the displacement between the target and the beam isocenter based on the actual location of the marker, and moving the patient in a direction and by a distance of the computed displacement to position the target at the desired situs.

98. (New) The method of claim 95, further comprising terminating movement of the patient when the actual location of the marker indicates that the target is at a desired situs relative to the beam isocenter, and irradiating the patient with radiation beam after the target has reached the desired situs.

99. (New) The method of claim 98 wherein the target comprises a treatment target that is to be irradiated with the radiation beam and the desired situs is at least approximately coincident with the beam isocenter.

100. (New) The method of claim 95, further comprising:
inputting to the computer a desired situs of the target relative to the beam isocenter and a desired distance between the target and the surface of the patient;
determining positions of a plurality of surface markers attached to the surface of the patient in addition to the marker implanted within the patient;
computing the displacement between the target and the beam isocenter based on the actual location of the implanted marker; and
computing distances between the implanted marker and respective surface markers to determine a thickness of the patient along a path of the radiation beam.

101. (New) The method of claim 100, further comprising automatically moving the patient according to the displacement between the target and the beam isocenter to position the target at the desired situs with respect to the beam isocenter.

102. (New) The method of claim 100, further comprising:
automatically moving the patient according to the displacement between the target and the beam isocenter to position the target at the desired situs with respect to the beam isocenter; and
controlling the radiation beam according to the thickness of the patient along a path of the radiation beam.

103. (New) A method of positioning a target of a patient relative to a beam isocenter of a radiation beam when the patient is situated on a patient support of a radiation treatment device so that a wireless marker implanted in the patient relative to the target can be sensed by a sensor, the method comprising:

inputting into a computer a desired coordinate of the marker in a reference frame corresponding to when the target is located at a desired situs;
determining a three-dimensional marker coordinate based on position information from the marker provided by the sensor; and
computing a three-dimensional displacement between the marker coordinate and the desired coordinate.

104. (New) A method of positioning a target of a patient relative to a beam isocenter of a radiation beam when the patient is situated on a patient support of a radiation treatment device so that a wireless marker implanted in the patient relative to the target can be sensed by a sensor, the method comprising:

inputting into a computer a target coordinate defining a desired situs of the target in a reference frame;
determining a three-dimensional marker coordinate based on position information from the marker provided by the sensor;

calculating an actual location of the target in the reference frame based on the three-dimensional marker coordinate using the computer; and
computing a three-dimensional displacement between the actual location of the target and the target coordinate.

105. (New) The method of claim 104, further comprising automatically moving a patient support upon which the patient is situated according to the computed three-dimensional displacement to place the target at the desired situs.

106. (New) The method of claim 105, further comprising repeating the determining and computing procedures after moving the patient to confirm that the target is at the desired situs.

107. (New) The method of claim 104, further comprising moving the patient support upon which the patient is situated according to the computed three-dimensional displacement.

108. (New) The method of claim 104 further comprising situating the patient on the patient support by determining respective locations of a plurality of surface markers attached to the patient and positioning the patient on the patient support so that individual surface markers are generally within a desired range of corresponding surface marker locations.

109. (New) The method of claim 104, further comprising:
automatically moving the patient support upon which the patient is situated according to the computed three-dimensional displacement to place the target at the desired situs; and
irradiating the patient with the radiation beam.

110. (New) The method of claim 109 further comprising repeating the determining and computing procedures after moving the patient but before irradiating the patient to confirm that the target is at the desired situs.

111. (New) The method of claim 104 wherein another human can be proximate to the patient during the determining and computing procedures.

112. (New) In radiation therapy using a radiation beam, a method of setting up a radiation treatment for a patient situated on a patient support of a radiation treatment device so that a wireless marker implanted in the patient relative to a target can be sensed by a sensor, the method comprising:

- determining an actual location of the target in a three-dimensional reference frame using position information of the marker provided by the sensor;
- calculating an objective output of an offset between the actual location of the target and a desired situs for the target; and
- moving the patient automatically via the computer according to the objective output to position the target at the desired situs.

113. (New) In radiation therapy using a radiation beam, a method of setting up a radiation treatment for a patient situated on a patient support of a radiation treatment device so that a wireless marker implanted in the patient relative to a target can be sensed by a sensor, the method comprising:

- determining an actual location of the marker in a three-dimensional reference frame using position information of the marker provided by the sensor;
- calculating an objective output of an offset between the actual location of the marker and a desired location for the marker, wherein the target is located at a desired situs in the reference frame when the marker is at the desired location for the marker; and
- moving the patient automatically via the computer according to the objective output to position the target at the desired situs.

114. (New) The method of claim 113, further comprising irradiating the patient after the target is positioned at the desired situs.

115. (New) The method of claim 113 wherein the target is a treatment target and the desired situs is coincident with a beam isocenter of the radiation beam, and wherein the method further comprises (a) moving the patient automatically via the computer to position the treatment target at the beam isocenter and (b) irradiating the treatment target.

116. (New) In radiation therapy using a radiation beam, a method of setting up a radiation treatment for a patient situated on a patient support of a radiation treatment device so that a wireless marker implanted in the patient relative to a target can be sensed by a sensor, the method comprising:

inputting into a computer a desired situs of the target relative to a reference frame;

determining an actual location of the target in the reference frame based on an actual location of the marker in the reference frame by using a computer to automatically process position information of the marker provided by the sensor; and

computing a displacement between the actual location of the target and the desired situs for the target.

117. (New) In radiation therapy using a radiation beam, a method of setting up a radiation treatment for a patient situated on a patient support of a radiation treatment device so that a wireless marker implanted in the patient relative to a target can be sensed by a sensor, the method comprising:

inputting into a computer a desired situs of the target relative to a reference frame;

determining an actual location of the marker by using a computer to automatically process the position information of the marker; and

computing a displacement between the actual location of the marker and a desired marker location for the marker, wherein the treatment target is located at the desired situs when the marker is at the desired marker location.

118. (New) The method of claim 117, further comprising automatically moving the patient support upon which the patient is situated according to the computed displacement to place the treatment target at the desired situs.

119. (New) The method of claim 118, further comprising repeating the determining and computing procedures after moving the patient to confirm that the treatment target is at the desired situs.

120. (New) The method of claim 117, further comprising moving a patient support upon which the patient is situated according to the computed displacement.

121. (New) The method of claim 117 wherein determining the actual location of the marker comprises calculating a three-dimensional coordinate of the marker in the reference frame.

122. (New) The method of claim 117 further comprising situating the patient on the patient support by determining respective locations of a plurality of surface markers attached to the patient and positioning the patient on the patient support so that individual surface markers are generally within a desired range of corresponding surface marker locations.

123. (New) The method of claim 117 wherein the marker comprises a resonating marker that wirelessly transmits a signal in response to a wirelessly transmitted excitation energy, and the method further comprises exciting the marker with the excitation energy.

124. (New) The method of claim 123 wherein the marker comprises a marker that transmits a resonating magnetic field in response to an alternating magnetic field, and the method further comprises exciting the marker with the alternating magnetic field.

125. (New) The method of claim 117, further comprising:
automatically moving a patient support upon which the patient is situated
according to the computed displacement to place the treatment target at
the desired situs; and
irradiating the patient with the radiation beam.

126. (New) The method of claim 125 further comprising repeating the determining and computing procedures after moving the patient but before irradiating the patient to confirm that the treatment target is at the desired situs.

127. (New) The method of claim 117 wherein another human can be proximate to the patient during the determining and computing procedures.

128. (New) The method of claim 117 wherein the computing procedure occurs generally while the sensor obtains the position information.

129. (New) A method for radiation treatment of a patient, comprising:
implanting a wireless marker into the patient at a position relative to a target of
the patient;
situating the patient on a patient support of a radiation treatment device so that
the marker can be sensed by a sensor and a radiation beam can irradiate
the patient;
sensing position information of the marker;
determining a location of the marker relative to a reference frame based on the
position information; and

computing a displacement between the location of the marker and a desired location of the marker at which the target is located at a desired situs relative to the isocenter of the radiation beam.

130. (New) The method of claim 129, further comprising automatically moving the patient support according to the computed displacement to place the target at the desired situs.

131. (New) The method of claim 129, further comprising:
automatically moving the patient support according to the computed displacement to place the target at the desired situs; and
irradiating the patient with the radiation beam.

132. (New) A method for radiation treatment of a patient, comprising:
implanting a wireless marker into the patient at a position relative to a target of the patient;
situating the patient such that the implanted marker is within a range of a sensor that can detect the marker;
sensing the marker to obtain position information related to the location of the marker;
determining an actual location of the target in a reference frame based on the position information of the marker;
moving the patient according to the actual location of the target to reduce a displacement between the actual location of the target and a desired location for the target; and
tracking the target in the reference frame during movement of the patient by repeating the sensing and determining procedures while moving the patient.

133. (New) The method of claim 132, further comprising terminating movement of the patient when the actual location of the marker indicates that the target is at a desired situs relative to the beam isocenter.

134. (New) The method of claim 133, further comprising irradiating the patient when the actual location of the marker indicates that the target is at a desired situs relative to the beam isocenter.

135. (New) A method for radiation treatment of a patient, comprising:
implanting a wireless marker into the patient at a position relative to a target of the patient;
inputting into a computer a target coordinate defining a desired situs of the target in a reference frame;
situating the patient on a patient support so that a sensor can obtain position information of the marker;
determining a three-dimensional marker coordinate defining an actual location of the target in the reference frame by automatically processing the position information using the computer; and
computing a three-dimensional displacement between the actual location of the target and the target coordinate.

136. (New) The method of claim 135, further comprising automatically moving the patient support according to the computed three-dimensional displacement to place the target at the desired situs.

137. (New) The method of claim 135, further comprising:
automatically moving the patient support according to the computed three-dimensional displacement to place the target at the desired situs; and
irradiating the patient with the radiation beam.

138. (New) A method for radiation treatment of a patient, comprising:
implanting a wireless marker into the patient at a position relative to a target of the patient;
inputting into a computer a desired situs of the target relative to a reference frame;
situating the patient on a patient support so that a sensor can obtain position information of the marker;
determining an actual location of the marker by automatically processing the position information using the computer; and
computing a displacement between the actual location of the marker and a desired location of the marker at which the target is located at the desired situs.

139. (New) The method of claim 138, further comprising automatically moving the patient support according to the computed displacement to place the target at the desired situs.

140. (New) The method of claim 139, further comprising repeating the situating, determining and computing procedures after moving the patient to confirm that the target is at the desired situs.

141. (New) The method of claim 138, further comprising moving the patient support according to the computed displacement.

142. (New) The method of claim 138 wherein determining the actual location of the marker comprises calculating a three-dimensional coordinate of the marker in the reference frame.

143. (New) The method of claim 138, further comprising:
automatically moving the patient support according to the computed displacement to place the target at the desired situs; and
irradiating the patient with the radiation beam.

144. (New) An apparatus for preparing a patient for radiation treatment in a radiation device that directs a radiation beam to a beam isocenter, the apparatus comprising:

- a wireless marker configured to be implanted in the patient relative to a target;
- a movable patient support having a platform and a drive system to move the platform, wherein the platform is configured to situate the patient so that the marker can be sensed by a sensor and the radiation beam can irradiate the patient; and
- a computer including computer operable instructions that cause the computer to perform the method of (a) receiving position information of the marker provided by the sensor, (b) determining a location of the marker relative to a reference frame using the position information, and (c) computing a displacement between the location of the marker and a desired location for the marker, wherein the target is located at a desired situs in the reference frame when the marker is at the desired location for the marker.

145. (New) An apparatus for preparing a patient for radiation treatment in a radiation device that directs a radiation beam to a beam isocenter, the apparatus comprising:

- a wireless marker configured to be implanted in the patient relative to a target;
- a movable patient support having a platform and a drive system to move the platform, wherein the platform is configured to situate the patient so that the marker can be sensed by a sensor and the radiation beam can irradiate the patient; and

a computer including computer operable instructions that cause the computer to perform the method of (a) receiving position information of the marker provided by the sensor, (b) determining a location of the target relative to a reference frame using the position information of the marker, and (c) computing a displacement between the location of the target and a desired location of the target in the reference frame.

146. (New) An apparatus for preparing a patient for radiation treatment in a radiation device that directs a radiation beam to a beam isocenter, the apparatus comprising:

a wireless marker configured to be implanted in the patient relative to a target;
a movable patient support having a platform and a drive system to move the platform, wherein the platform is configured to situate the patient so that the marker can be sensed by a sensor and the radiation beam can irradiate the patient; and

a computer including computer operable instructions that cause the computer to perform the method of (a) receiving position information provide by the sensor related to the location of the marker, (b) determining an actual location of the target in a reference frame based on the position information of the marker, (c) moving the patient according to the actual location of the target if a displacement between the actual location of the target and a desired location for the target is beyond an acceptable range, and (d) tracking the target relative to the reference frame by repeating the receiving and determining procedures.

147. (New) An apparatus for preparing a patient for radiation treatment in a radiation device that directs a radiation beam to a beam isocenter, the apparatus comprising:

a wireless marker configured to be implanted in the patient relative to a target;

- a movable patient support having a platform and a drive system to move the platform, wherein the platform is configured to situate the patient so that the marker can be sensed by a sensor and the radiation beam can irradiate the patient; and
- a computer including computer operable instructions that cause the computer to perform the method of (a) receiving position information provided by the sensor related to the location of the marker, (b) determining an actual location of the marker based on the position information, (c) moving the patient according to the actual location of the marker to reduce a displacement between an actual location of the target and a desired location of the target, and (d) tracking the target during movement of the patient by repeating the receiving and determining procedures while moving the patient.

148. (New) An apparatus for preparing a patient for radiation treatment in a radiation device that directs a radiation beam to a beam isocenter, the apparatus comprising:

- a wireless marker configured to be implanted in the patient relative to a target;
- a movable patient support having a platform and a drive system to move the platform, wherein the platform is configured to situate the patient so that the marker can be sensed by a sensor and the radiation beam can irradiate the patient; and
- a computer including (a) a memory containing a target coordinate relative to a desired situs of the target in a reference frame, and (b) computer operable instructions that cause the computer to perform the method of (i) determining a three-dimensional marker coordinate defining an actual location of the marker and being relative to an actual location of the target in the reference frame, and (ii) computing a three-dimensional displacement between at least one of (1) the marker coordinate and the

target coordinate and/or (2) the actual location of the target and the desired situs of the target.

149. (New) An apparatus for preparing a patient for radiation treatment in a radiation device that directs a radiation beam to a beam isocenter, the apparatus comprising:

- a wireless marker configured to be implanted in the patient relative to a target;
- a movable patient support having a platform and a drive system to move the platform, wherein the platform is configured to situate the patient so that the marker can be sensed by a sensor and the radiation beam can irradiate the patient; and
- a computer including (a) a memory containing a target coordinate of a desired situs of the target relative to a reference frame, and (b) computer operable instructions that cause the computer to perform the method of (i) determining a three-dimensional marker coordinate, (ii) calculating an actual location of the target based on the three-dimensional marker coordinate, and (iii) computing a three-dimensional displacement between the actual location of the target and the target coordinate.

150. (New) An apparatus for preparing a patient for radiation treatment in a radiation device that directs a radiation beam to a beam isocenter, the apparatus comprising:

- a wireless marker configured to be implanted in the patient relative to a target;
- a movable patient support having a platform and a drive system to move the platform, wherein the platform is configured to situate the patient so that the marker can be sensed by a sensor and the radiation beam can irradiate the patient; and
- a computer including (a) a memory containing a desired situs of the target relative to a reference frame, and (b) computer operable instructions that cause the computer to perform the method of (i) determining a three-

dimensional marker coordinate based on position information of the marker obtained from the sensor, and (ii) computing a displacement between the three-dimensional marker coordinate and a desired marker location for the marker, wherein the target is located at the desired situs when the marker is located at the desired marker location.